

SEQUENCE LISTING

<110> Colgan, Sean

<120> Compositions and Methods for Treating Hematologic Malignancies and Multiple Drug Resistance

<130> B0801/7233 (ERP)

<150> US 60/243,542
<151> 2000-10-26

<160> 67

<170> PatentIn version 3.1

<210> 1
<211> 4646
<212> DNA
<213> homo sapiens

<400> 1

cctactctat tcagatattc tccagattcc taaagattag agatcatttc tcatttcct	60
aggagtactc acttcaggaa gcaaccagat aaaagagagg tgcaacggaa gccagaacat	120
tcctcctgga aattcaacct gttcgcagt ttctcgagga atcagcattc agtcaatccg	180
ggccgggagc agtcatctgt ggtgaggctg attggctggg caggaacagc gccggggcgt	240
gggctgagca cagcgcttcg ctctcttgc cacaggaagc ctgagctcat tcgagtagcg	300
gctttccaa gctcaaagaa gcagaggccg ctgttcgttt cctttaggtc tttccactaa	360
agtccggagta tcttcttcca agatttcacg tcttggtggc cggttccaagg agcgcgaggt	420
cgggatggat cttgaagggg accgcaatgg aggagcaaag aagaagaact tttttaaact	480
gaacaataaa agtaaaaaaag ataagaagga aaagaaaacca actgtcagtg tattttcaat	540
gtttcgctat tcaaattggc ttgacaagtt gtatatggtg gtggaaactt tggctgccat	600
catccatggg gctggacttc ctctcatgat gctgggttt ggagaaatga cagatatctt	660
tgcaaatgca ggaaatttag aagatctgat gtcaaacatc actaatagaa gtgatataaa	720
tgatacaggg ttcttcatga atctggagga agacatgacc aggtatgcct attattacag	780
tggaaatttgtt gctgggggtgc tgggtgctgc ttacatttcg gtttcatttt ggtgcctggc	840
agctggaaaga caaatacaca aaatttagaaa acagttttt catgctataa tgcgacagga	900
gataggctgg tttgatgtgc acgatgttg ggagcttaac acccgactta cagatgatgt	960
ctctaagatt aatgaagtta ttggtgacaa aattggaaatg ttcttcagt caatggcaac	1020
atttttcaact gggtttatag taggatttac acgtggttgg aagctaacc ttgtgatttt	1080
ggccatcagt cctgttcttg gactgtcagc tgctgtctgg gcaaagatac tatcttcatt	1140

tactgataaa gaactcttag cgtatgcaaa agctggagca gtagctgaag aggtcttggc 1200
agcaattaga actgtgattg catttggagg acaaaaagaaa gaacttgaaa ggtacaacaa 1260
aaatttagaa gaagctaaaaa gaattggat aaagaaaagct attacagcca atatttctat 1320
aggtgctgct ttccctgctga tctatgcac tcattgtctg gccttcttgtt atgggaccac 1380
cttggtcctc tcagggaat attctattgg acaagtactc actgtattct ttctgtatt 1440
aattgggct ttttagtgttg gacaggcatc tccaaggcattt gaagcatttgc caaatgcaag 1500
aggagcagct tatgaaatct tcaagataat tgataataag ccaagtatttgc acagctattc 1560
gaagagtgccc cacaaccatc ataataattaa gggaaatttgc gaattcagaa atgttcactt 1620
cagttaccca tctcgaaaag aagttaagat ctgtgggc ctgtacccatc aggtgcagag 1680
tgggcagacg gtggccctgg ttggaaacag tggctgtggg aagagcacaa cagtcagct 1740
gatgcagagg ctctatgacc ccacagaggg gatggtcagt gttgtatggac aggatatttgc 1800
gaccataaaat gtaaggtttc tacggaaat cattgggtgtt gtgagtcagg aacctgtatt 1860
gtttgccacc acgatagctg aaaacattcg ctatggccgt gaaaatgtca ccatggatga 1920
gattgagaaaa gctgtcaagg aagccaatgc ctatgacttt atcatgaaac tgcctcataa 1980
atttgacacc ctgggtggag agagaggggc ccagttgagt ggtggcaga agcagaggat 2040
cgccatttgca cgtggccctgg ttgcacaccc caagatcctc ctgtggatg aggccacgtc 2100
agccttggac acagaaagcg aagcagtggt tcaggtggct ctggataagg ccagaaaagg 2160
tcggaccacc attgtgatag ctcatcgtt gtctacagtt cgtaatgctg acgtcatcg 2220
tggtttcgat gatggagtca ttgtggagaa agggaaatcat gatgaactca tgaaagagaa 2280
aggcatttac ttcaaaacttg tcacaatgca gacagcagga aatgaaggttt aattagaaaa 2340
tgtagctgat gaatccaaaaa gtgaaattga tgccttggaa atgtcttcaa atgattcaag 2400
atccagtcta ataagaaaaa gatcaactcg taggagtgtc cgtggatcac aagcccaaga 2460
cagaaagctt agtacccaaag aggctctgga tgaaagtata cctccagttt cctttggag 2520
gattatgaag ctaaattttaa ctgaatggcc ttatggatgtt gttggatgtat tttgtgccat 2580
tataaatgga ggcctgcaac cagcatttgc aataatattt tcaaagatta taggggtttt 2640
tacaagaattt gatgatcctg aaacaaaacg acagaatagt aacttggatgtt cactattgtt 2700
tctagccctt ggaatttattt ctttttattac atttttccctt cagggtttca catttggca 2760
agctggagag atccctcacca agcggctccg atacatggtt ttccgatcca tgctcagaca 2820
ggatgtgagt tgggttgatg accctaaaaa caccactgga gcattgacta ccaggctcgc 2880
caatgatgct gctcaagttt aaggggctat aggttccagg cttgctgtt aa ttacccagaa 2940

tatagcaaat cttgggacag gaataattat atccttcatc tatgggtggc aactaacact 3000
gttactctta gcaattgtac ccatcattgc aatagcagga gttgttggaa tgaaaatgtt 3060
gtctggacaa gcactgaaag ataagaaaga actagaaggt gctgggaaga tcgctactga 3120
agcaatagaa aacctccgaa ccgttgttgc tttgactcg gagcagaagt ttgaacatat 3180
gtatgctcg agtttgcagg taccatacag aaactcttg aggaaagcac acatcttgg 3240
aattacattt tccttcaccc aggcaatgat gtattttcc tatgctggat gtttccgggtt 3300
tggagcctac ttgggtggcac ataaactcat gagctttag gatgttctgt tagtattttc 3360
agctgttgc tttgggtgccca tggccgtggg gcaagtcagt tcatttgctc ctgactatgc 3420
caaagccaaa atatcagcag cccacatcat catgatcatt gaaaaaaccc ctttgattga 3480
cagctacagc acggaaggcc taatgccgaa cacattggaa ggaaatgtca catttggtga 3540
agttgtattc aactatccc cccgaccgga catcccagtg ctgcaggac tgagcctgga 3600
ggtgaagaag ggcacacgc tggctctggt gggcagcagt ggctgtggg agagcacagt 3660
ggtccagctc ctggagcgggt tctacgaccc ctggcaggg aaagtgcgtc ttgatggcaa 3720
agaaataaaag cgactgaatg ttcaatggct ccgagcacac ctggcatcg tgtcccgagg 3780
gccccatcctg tttgactgca gcattgctga gaacattgcc tatggagaca acagccgggt 3840
ggtgtcacag gaagagatcg tgagggcagc aaaggaggcc aacatacatg ctttcatcga 3900
gtcactgcct aataaatata gcactaaagt aggagacaaa ggaactcagc tctctgggtgg 3960
ccagaaacaa cgcattgccca tagctcgatc cttgtttaga cagcctata ttttgccttt 4020
ggatgaagcc acgtcagctc tggatacaga aagtggaaag gttgtccaag aagccctgg 4080
caaagccaga gaaggccgca cctgcattgt gattgctcac cgcctgtcca ccatccagaa 4140
tgcagactta atagtgggtgt ttcagaatgg cagagtcaag gagcatggca cgcacatcagca 4200
gctgctggca cagaaaggca tctattttc aatggtcagt gtccaggctg gaacaaagcg 4260
ccagtgaact ctgactgtat gagatgttaa atactttta atatttggg agatatgaca 4320
tttattcaaa gttaaaagca aacacttaca gaattatgaa gaggtatctg tttaacattt 4380
cctcagtc当地 gttcagagact tcgtatccaa aggaacagag tgagagacat 4440
catcaagtgg agagaaatca tagtttacac tgcattataa attttataac agaattaaag 4500
tagattttaa aagataaaat gtgtatccaa gtttatattt tcccatgg actgtactg 4560
actgccttgc taaaagatta tagaagttagc aaaaagtatt gaaatgtttg cataaagtgt 4620
ctataataaa actaaacttt catgtg 4646

<210> 2
<211> 1280
<212> PRT
<213> homo sapiens

<400> 2

Met Asp Leu Glu Gly Asp Arg Asn Gly Gly Ala Lys Lys Lys Asn Phe
1 5 10 15

Phe Lys Leu Asn Asn Lys Ser Glu Lys Asp Lys Lys Glu Lys Lys Pro
20 25 30

Thr Val Ser Val Phe Ser Met Phe Arg Tyr Ser Asn Trp Leu Asp Lys
35 40 45

Leu Tyr Met Val Val Gly Thr Leu Ala Ala Ile Ile His Gly Ala Gly
50 55 60

Leu Pro Leu Met Met Leu Val Phe Gly Glu Met Thr Asp Ile Phe Ala
65 70 75 80

Asn Ala Gly Asn Leu Glu Asp Leu Met Ser Asn Ile Thr Asn Arg Ser
85 90 95

Asp Ile Asn Asp Thr Gly Phe Phe Met Asn Leu Glu Glu Asp Met Thr
100 105 110

Arg Tyr Ala Tyr Tyr Tyr Ser Gly Ile Gly Val Leu Val Ala
115 120 125

Ala Tyr Ile Gln Val Ser Phe Trp Cys Leu Ala Ala Gly Arg Gln Ile
130 135 140

His Lys Ile Arg Lys Gln Phe Phe His Ala Ile Met Arg Gln Glu Ile
145 150 155 160

Gly Trp Phe Asp Val His Asp Val Gly Glu Leu Asn Thr Arg Leu Thr
165 170 175

Asp Asp Val Ser Lys Ile Asn Glu Val Ile Gly Asp Lys Ile Gly Met
180 185 190

Phe Phe Gln Ser Met Ala Thr Phe Phe Thr Gly Phe Ile Val Gly Phe
195 200 205

Thr Arg Gly Trp Lys Leu Thr Leu Val Ile Leu Ala Ile Ser Pro Val

210

215

220

Leu Gly Leu Ser Ala Ala Val Trp Ala Lys Ile Leu Ser Ser Phe Thr
225 230 235 240

Asp Lys Glu Leu Leu Ala Tyr Ala Lys Ala Gly Ala Val Ala Glu Glu
245 250 255

Val Leu Ala Ala Ile Arg Thr Val Ile Ala Phe Gly Gly Gln Lys Lys
260 265 270

Glu Leu Glu Arg Tyr Asn Lys Asn Leu Glu Glu Ala Lys Arg Ile Gly
275 280 285

Ile Lys Lys Ala Ile Thr Ala Asn Ile Ser Ile Gly Ala Ala Phe Leu
290 295 300

Leu Ile Tyr Ala Ser Tyr Ala Leu Ala Phe Trp Tyr Gly Thr Thr Leu
305 310 315 320

Val Leu Ser Gly Glu Tyr Ser Ile Gly Gln Val Leu Thr Val Phe Phe
325 330 335

Ser Val Leu Ile Gly Ala Phe Ser Val Gly Gln Ala Ser Pro Ser Ile
340 345 350

Glu Ala Phe Ala Asn Ala Arg Gly Ala Ala Tyr Glu Ile Phe Lys Ile
355 360 365

Ile Asp Asn Lys Pro Ser Ile Asp Ser Tyr Ser Lys Ser Gly His Lys
370 375 380

Pro Asp Asn Ile Lys Gly Asn Leu Glu Phe Arg Asn Val His Phe Ser
385 390 395 400

Tyr Pro Ser Arg Lys Glu Val Lys Ile Leu Lys Gly Leu Asn Leu Lys
405 410 415

Val Gln Ser Gly Gln Thr Val Ala Leu Val Gly Asn Ser Gly Cys Gly
420 425 430

Lys Ser Thr Thr Val Gln Leu Met Gln Arg Leu Tyr Asp Pro Thr Glu
435 440 445

Gly Met Val Ser Val Asp Gly Gln Asp Ile Arg Thr Ile Asn Val Arg

450

455

460

Phe Leu Arg Glu Ile Ile Gly Val Val Ser Gln Glu Pro Val Leu Phe
465 470 475 480

Ala Thr Thr Ile Ala Glu Asn Ile Arg Tyr Gly Arg Glu Asn Val Thr
485 490 495

Met Asp Glu Ile Glu Lys Ala Val Lys Glu Ala Asn Ala Tyr Asp Phe
500 505 510

Ile Met Lys Leu Pro His Lys Phe Asp Thr Leu Val Gly Glu Arg Gly
515 520 525

Ala Gln Leu Ser Gly Gly Gln Lys Gln Arg Ile Ala Ile Ala Arg Ala
530 535 540

Leu Val Arg Asn Pro Lys Ile Leu Leu Asp Glu Ala Thr Ser Ala
545 550 555 560

Leu Asp Thr Glu Ser Glu Ala Val Val Gln Val Ala Leu Asp Lys Ala
565 570 575

Arg Lys Gly Arg Thr Thr Ile Val Ile Ala His Arg Leu Ser Thr Val
580 585 590

Arg Asn Ala Asp Val Ile Ala Gly Phe Asp Asp Gly Val Ile Val Glu
595 600 605

Lys Gly Asn His Asp Glu Leu Met Lys Glu Lys Gly Ile Tyr Phe Lys
610 615 620

Leu Val Thr Met Gln Thr Ala Gly Asn Glu Val Glu Leu Glu Asn Ala
625 630 635 640

Ala Asp Glu Ser Lys Ser Glu Ile Asp Ala Leu Glu Met Ser Ser Asn
645 650 655

Asp Ser Arg Ser Ser Leu Ile Arg Lys Arg Ser Thr Arg Arg Ser Val
660 665 670

Arg Gly Ser Gln Ala Gln Asp Arg Lys Leu Ser Thr Lys Glu Ala Leu
675 680 685

Asp Glu Ser Ile Pro Pro Val Ser Phe Trp Arg Ile Met Lys Leu Asn

690

695

700

Leu Thr Glu Trp Pro Tyr Phe Val Val Gly Val Phe Cys Ala Ile Ile
705 710 715 720

Asn Gly Gly Leu Gln Pro Ala Phe Ala Ile Ile Phe Ser Lys Ile Ile
725 730 735

Gly Val Phe Thr Arg Ile Asp Asp Pro Glu Thr Lys Arg Gln Asn Ser
740 745 750

Asn Leu Phe Ser Leu Leu Phe Leu Ala Leu Gly Ile Ile Ser Phe Ile
755 760 765

Thr Phe Phe Leu Gln Gly Phe Thr Phe Gly Lys Ala Gly Glu Ile Leu
770 775 780

Thr Lys Arg Leu Arg Tyr Met Val Phe Arg Ser Met Leu Arg Gln Asp
785 790 795 800

Val Ser Trp Phe Asp Asp Pro Lys Asn Thr Thr Gly Ala Leu Thr Thr
805 810 815

Arg Leu Ala Asn Asp Ala Ala Gln Val Lys Gly Ala Ile Gly Ser Arg
820 825 830

Leu Ala Val Ile Thr Gln Asn Ile Ala Asn Leu Gly Thr Gly Ile Ile
835 840 845

Ile Ser Phe Ile Tyr Gly Trp Gln Leu Thr Leu Leu Leu Ala Ile
850 855 860

Val Pro Ile Ile Ala Ile Ala Gly Val Val Glu Met Lys Met Leu Ser
865 870 875 880

Gly Gln Ala Leu Lys Asp Lys Lys Glu Leu Glu Gly Ala Gly Lys Ile
885 890 895

Ala Thr Glu Ala Ile Glu Asn Phe Arg Thr Val Val Ser Leu Thr Gln
900 905 910

Glu Gln Lys Phe Glu His Met Tyr Ala Gln Ser Leu Gln Val Pro Tyr
915 920 925

Arg Asn Ser Leu Arg Lys Ala His Ile Phe Gly Ile Thr Phe Ser Phe

930

935

940

Thr Gln Ala Met Met Tyr Phe Ser Tyr Ala Gly Cys Phe Arg Phe Gly
945 950 955 960

Ala Tyr Leu Val Ala His Lys Leu Met Ser Phe Glu Asp Val Leu Leu
965 970 975

Val Phe Ser Ala Val Val Phe Gly Ala Met Ala Val Gly Gln Val Ser
980 985 990

Ser Phe Ala Pro Asp Tyr Ala Lys Ala Lys Ile Ser Ala Ala His Ile
995 1000 1005

Ile Met Ile Ile Glu Lys Thr Pro Leu Ile Asp Ser Tyr Ser Thr
1010 1015 1020

Glu Gly Leu Met Pro Asn Thr Leu Glu Gly Asn Val Thr Phe Gly
1025 1030 1035

Glu Val Val Phe Asn Tyr Pro Thr Arg Pro Asp Ile Pro Val Leu
1040 1045 1050

Gln Gly Leu Ser Leu Glu Val Lys Lys Gly Gln Thr Leu Ala Leu
1055 1060 1065

Val Gly Ser Ser Gly Cys Gly Lys Ser Thr Val Val Gln Leu Leu
1070 1075 1080

Glu Arg Phe Tyr Asp Pro Leu Ala Gly Lys Val Leu Leu Asp Gly
1085 1090 1095

Lys Glu Ile Lys Arg Leu Asn Val Gln Trp Leu Arg Ala His Leu
1100 1105 1110

Gly Ile Val Ser Gln Glu Pro Ile Leu Phe Asp Cys Ser Ile Ala
1115 1120 1125

Glu Asn Ile Ala Tyr Gly Asp Asn Ser Arg Val Val Ser Gln Glu
1130 1135 1140

Glu Ile Val Arg Ala Ala Lys Glu Ala Asn Ile His Ala Phe Ile
1145 1150 1155

Glu Ser Leu Pro Asn Lys Tyr Ser Thr Lys Val Gly Asp Lys Gly

1160

1165

1170

Thr Gln Leu Ser Gly Gly Gln Lys Gln Arg Ile Ala Ile Ala Arg
1175 1180 1185

Ala Leu Val Arg Gln Pro His Ile Leu Leu Leu Asp Glu Ala Thr
1190 1195 1200

Ser Ala Leu Asp Thr Glu Ser Glu Lys Val Val Gln Glu Ala Leu
1205 1210 1215

Asp Lys Ala Arg Glu Gly Arg Thr Cys Ile Val Ile Ala His Arg
1220 1225 1230

Leu Ser Thr Ile Gln Asn Ala Asp Leu Ile Val Val Phe Gln Asn
1235 1240 1245

Gly Arg Val Lys Glu His Gly Thr His Gln Gln Leu Leu Ala Gln
1250 1255 1260

Lys Gly Ile Tyr Phe Ser Met Val Ser Val Gln Ala Gly Thr Lys
1265 1270 1275

Arg Gln
1280

<210> 3
<211> 3678

<212> DNA

<213> homo sapiens

<400> 3

gtgaagacat	cgcggggacc	gattcaccat	ggagggcgcc	ggcggcgcg	acgacaagaa	60
aaagataagt	tctgaacgtc	gaaaagaaaa	gtctcgagat	gcagccagat	ctcggcgaag	120
taaagaatct	gaagttttt	atgagcttgc	tcatcagttg	ccacttccac	ataatgtgag	180
ttcgcatctt	gataaggcct	ctgtgatgag	gcttaccatc	agctatttgc	gtgtgaggaa	240
acttctggat	gctggtgatt	tggatattga	agatgacatg	aaagcacaga	tgaattgctt	300
ttatttgaaa	gccttggatg	gttttgttat	ggttctcaca	gatgatggtg	acatgattt	360
catttctgat	aatgtgaaca	aatacatgg	attaactcag	tttgaactaa	ctggacacag	420
tgtgtttgat	tttactcatc	catgtgacca	tgaggaaatg	agagaaatgc	ttacacacag	480
aaatggcctt	gtgaaaaagg	gtaaagaaca	aaacacacag	cgaagctttt	ttctcagaat	540

tatttaata ccctctgatt tagcatgtag actgctgggg caatcaatgg atgaaagtgg 2400
attaccacag ctgaccagtt atgattgtga agttaatgct cctataacaag gcagcagaaa 2460
cctactgcag ggtgaagaat tactcagagc tttggatcaa gttaactgag ctttttctta 2520
attcattcc ttttttggc cactggtggc tcactaccta aagcagtcta tttatattt 2580
ctacatctaa tttagaagc ctggctacaa tactgcacaa acttggtag ttcaattttt 2640
gatcccctt ctacttaatt tacattaatg ctctttta gtatgttctt taatgctgga 2700
tcacagacag ctcattttct cagtttttg gtattnaac cattgcattt cagtagcatc 2760
atttaaaaaa atgcacccctt ttatttatattt attttggct agggagttt tcccttttc 2820
gaattatttt taagaagatg ccaatataat ttttgaaga aggagtaac ctttcatcat 2880
gatcataggc agttaaaaaa ttttacacc tttttttca cattttacat aaataataat 2940
gctttgccag cagtacgtgg tagccacaat tgcacaatat atttcttaa aaaataccag 3000
cagttactca tggaatatat tctgcgttta taaaactagt tttaagaag aaatttttt 3060
tggcctatga aattgttaaa cctggAACAT gacattgtta atcatataat aatgattctt 3120
aaatgctgta tggtttatta tttaaatggg taaagccatt tacataatat agaaagat 3180
gcatatatct agaaggatg tggcatttat ttggataaaa ttctcaattc agagaaatca 3240
tctgatgttt ctatagtcac tttgccagct caaaagaaaa caatacccta tgttagttgt 3300
gaagtttatg ctaatattgt gtaactgata tttaaacctaa atgttctgcc taccctgtt 3360
gtataaagat atttgagca gactgtaaac aagaaaaaaa aaatcatgca ttcttagcaa 3420
aattgcctag tatgttaatt tgctcaaaat acaatgtttg atttatgca ctgtcgct 3480
attaacatcc ttttttcat gtagatttca ataattgagt aatttttagaa gcattat 3540
aggaatatat agttgtcaca gtaaatatct tgtttttct atgtacattt tacaaat 3600
tcattccctt tgctcttgc gttggatct aacactaact gtattgttt gttacatcaa 3660
ataaacatct tctgtgga 3678

<210> 4
<211> 826
<212> PRT
<213> homo sapiens

<400> 4

Met Glu Gly Ala Gly Gly Ala Asn Asp Lys Lys Lys Ile Ser Ser Glu
1 5 10 15

Arg Arg Lys Glu Lys Ser Arg Asp Ala Ala Arg Ser Arg Arg Ser Lys
20 25 30

Glu Ser Glu Val Phe Tyr Glu Leu Ala His Gln Leu Pro Leu Pro His
35 40 45

Asn Val Ser Ser His Leu Asp Lys Ala Ser Val Met Arg Leu Thr Ile
50 55 60

Ser Tyr Leu Arg Val Arg Lys Leu Leu Asp Ala Gly Asp Leu Asp Ile
65 70 75 80

Glu Asp Asp Met Lys Ala Gln Met Asn Cys Phe Tyr Leu Lys Ala Leu
85 90 95

Asp Gly Phe Val Met Val Leu Thr Asp Asp Gly Asp Met Ile Tyr Ile
100 105 110

Ser Asp Asn Val Asn Lys Tyr Met Gly Leu Thr Gln Phe Glu Leu Thr
115 120 125

Gly His Ser Val Phe Asp Phe Thr His Pro Cys Asp His Glu Glu Met
130 135 140

Arg Glu Met Leu Thr His Arg Asn Gly Leu Val Lys Lys Gly Lys Glu
145 150 155 160

Gln Asn Thr Gln Arg Ser Phe Phe Leu Arg Met Lys Cys Thr Leu Thr
165 170 175

Ser Arg Gly Arg Thr Met Asn Ile Lys Ser Ala Thr Trp Lys Val Leu
180 185 190

His Cys Thr Gly His Ile His Val Tyr Asp Thr Asn Ser Asn Gln Pro
195 200 205

Gln Cys Gly Tyr Lys Lys Pro Pro Met Thr Cys Leu Val Leu Ile Cys
210 215 220

Glu Pro Ile Pro His Pro Ser Asn Ile Glu Ile Pro Leu Asp Ser Lys
225 230 235 240

Thr Phe Leu Ser Arg His Ser Leu Asp Met Lys Phe Ser Tyr Cys Asp
245 250 255

Glu Arg Ile Thr Glu Leu Met Gly Tyr Glu Pro Glu Glu Leu Leu Gly
260 265 270

Arg Ser Ile Tyr Glu Tyr Tyr His Ala Leu Asp Ser Asp His Leu Thr
275 280 285

Lys Thr His His Asp Met Phe Thr Lys Gly Gln Val Thr Thr Gly Gln
290 295 300

Tyr Arg Met Leu Ala Lys Arg Gly Gly Tyr Val Trp Val Glu Thr Gln
305 310 315 320

Ala Thr Val Ile Tyr Asn Thr Lys Asn Ser Gln Pro Gln Cys Ile Val
325 330 335

Cys Val Asn Tyr Val Val Ser Gly Ile Ile Gln His Asp Leu Ile Phe
340 345 350

Ser Leu Gln Gln Thr Glu Cys Val Leu Lys Pro Val Glu Ser Ser Asp
355 360 365

Met Lys Met Thr Gln Leu Phe Thr Lys Val Glu Ser Glu Asp Thr Ser
370 375 380

Ser Leu Phe Asp Lys Leu Lys Glu Pro Asp Ala Leu Thr Leu Leu
385 390 395 400

Ala Pro Ala Ala Gly Asp Thr Ile Ile Ser Leu Asp Phe Gly Ser Asn
405 410 415

Asp Thr Glu Thr Asp Asp Gln Gln Leu Glu Glu Val Pro Leu Tyr Asn
420 425 430

Asp Val Met Leu Pro Ser Pro Asn Glu Lys Leu Gln Asn Ile Asn Leu
435 440 445

Ala Met Ser Pro Leu Pro Thr Ala Glu Thr Pro Lys Pro Leu Arg Ser
450 455 460

Ser Ala Asp Pro Ala Leu Asn Gln Glu Val Ala Leu Lys Leu Glu Pro
465 470 475 480

Asn Pro Glu Ser Leu Glu Leu Ser Phe Thr Met Pro Gln Ile Gln Asp
485 490 495

Gln Thr Pro Ser Pro Ser Asp Gly Ser Thr Arg Gln Ser Ser Pro Glu
500 505 510

Pro Asn Ser Pro Ser Glu Tyr Cys Phe Tyr Val Asp Ser Asp Met Val
515 520 525

Asn Glu Phe Lys Leu Glu Leu Val Glu Lys Leu Phe Ala Glu Asp Thr
530 535 540

Glu Ala Lys Asn Pro Phe Ser Thr Gln Asp Thr Asp Leu Asp Leu Glu
545 550 555 560

Met Leu Ala Pro Tyr Ile Pro Met Asp Asp Asp Phe Gln Leu Arg Ser
565 570 575

Phe Asp Gln Leu Ser Pro Leu Glu Ser Ser Ser Ala Ser Pro Glu Ser
580 585 590

Ala Ser Pro Gln Ser Thr Val Thr Val Phe Gln Gln Thr Gln Ile Gln
595 600 605

Glu Pro Thr Ala Asn Ala Thr Thr Thr Ala Thr Thr Asp Glu Leu
610 615 620

Lys Thr Val Thr Lys Asp Arg Met Glu Asp Ile Lys Ile Leu Ile Ala
625 630 635 640

Ser Pro Ser Pro Thr His Ile His Lys Glu Thr Thr Ser Ala Thr Ser
645 650 655

Ser Pro Tyr Arg Asp Thr Gln Ser Arg Thr Ala Ser Pro Asn Arg Ala
660 665 670

Gly Lys Gly Val Ile Glu Gln Thr Glu Lys Ser His Pro Arg Ser Pro
675 680 685

Asn Val Leu Ser Val Ala Leu Ser Gln Arg Thr Thr Val Pro Glu Glu
690 695 700

Glu Leu Asn Pro Lys Ile Leu Ala Leu Gln Asn Ala Gln Arg Lys Arg
705 710 715 720

Lys Met Glu His Asp Gly Ser Leu Phe Gln Ala Val Gly Ile Gly Thr
725 730 735

Leu Leu Gln Gln Pro Asp Asp His Ala Ala Thr Thr Ser Leu Ser Trp
740 745 750

Lys Arg Val Lys Gly Cys Lys Ser Ser Glu Gln Asn Gly Met Glu Gln
755 760 765

Lys Thr Ile Ile Leu Ile Pro Ser Asp Leu Ala Cys Arg Leu Leu Gly
770 775 780

Gln Ser Met Asp Glu Ser Gly Leu Pro Gln Leu Thr Ser Tyr Asp Cys
785 790 795 800

Glu Val Asn Ala Pro Ile Gln Gly Ser Arg Asn Leu Leu Gln Gly Glu
805 810 815

Glu Leu Leu Arg Ala Leu Asp Gln Val Asn
820 825

<210> 5
<211> 2616
<212> DNA
<213> homo sapiens

<400> 5

atggcggctc ctcccactgg ggggggggtg gcgcggcgcc ggtggcatct gcggccatgg 60
cggcgactac tgccaaacccc gaaatgacat cagatgtacc atcactgggt ccagccattg 120
cctctggaaa ctctggacct ggaattcaag gtggaggagc cattgtccag agggctatta 180
agcggcgacc agggctggat tttgatgatg atggagaagg gaacagtaaa ttttgaggt 240
gtgatgatga tcagatgtct aacgataagg agcggtttgc caggtcggat gatgagcaga 300
gctctgcgga taaagagaga cttgccaggg aaaatcacag taaaaattgaa cggcggcgac 360
ggaacaagat gacagcctac atcacagaac tgtcagatat ggtacccacc tgttagtgccc 420
tggctcgaaa accagacaag ctaaccatct tacgcatggc agtttctcac atgaagtccct 480
tgcgggaaac tggcaacaca tccactgatg gctcctataa gccgtcttc ctcactgatc 540
aggaactgaa acatttgatc ttggaggcag cagatggctt tctgtttatt gtctcatgtg 600
agacaggcag ggtggtgtat gtgtctgact ccgtgactcc tgtttgaac cagccacagt 660
ctgaatgggt tggcagcaca ctctatgatc aggtgcaccc agatgatgtg gataaaacttc 720
gtgagcagct ttccacttca gaaaatgccc tgacagggcg tatcctggat ctaaagactg 780
gaacagtgaa aaaggaaggt cagcagtctt ccatgagaat gtgtatggc tcaaggagat 840
cgtttatttg ccgaatgagg tgtggcagta gctctgtgga cccagttct gtgaataggc 900
tgagctttgt gaggaacaga tgcaggaatg gacttggctc tgtaaaggat gggAACCTC 960

acttcgtggt ggtccactgc acaggctaca tcaaggcctg gccccagca ggtgtttccc 1020
tcccagatga tgaccaggag gctggccagg gaagcaagtt ttgccttagtg gccattggca 1080
gattgcaggt aactagttct cccaaactgta cagacatgag taatgtttgt caaccaacag 1140
agttcatctc ccgacacaac attgagggtt tcttcacttt tgtggatcac cgctgtgtgg 1200
ctactgttgg ctaccagcca caggaactct tagaaagaa tattgttagaa ttctgtcatc 1260
ctgaagacca gcagcttcta agagacagct tccaaacaggt agtgaardtta aaaggccaag 1320
tgctgtctgt catgttccgg ttccggtcta agaaccaga atggctctgg atgagaacca 1380
gtcctttac tttccagaac cttactcag atgaaattga gtacatcatc tgtaccaaca 1440
ccaatgtgaa gaactctagc caagaaccac ggcctacact ctccaacaca atccagaggc 1500
cacaactagg tcccacagct aatttacccc tggagatggg ctcaggacag ctggcaccca 1560
ggcagcagca acagcaaaca gaattggaca tggtaccagg aagagatgga ctggccagct 1620
acaatcattc ccaggtggtt cagcctgtga caaccacagg accagaacac agcaagcccc 1680
ttgagaagtc agatggttta tttgccagg atagagatcc aagattttca gaaatctatc 1740
acaacatcaa tgcggatcag agtaaaggca tctcctccag cactgtccct gccacccaac 1800
agctattctc ccagggcaac acattccctc ctaccccccg gccggcagag aatttcagga 1860
atagtggcct agccctcct gtaaccatg tccagccatc agttctgca ggacagatgt 1920
tggcccgat ttccggccac tccaaacccca cccaaaggagc aaccccaact tggaccccta 1980
ctacccgctc aggctttct gcccagcagg tggctaccca ggctactgct aagactcgta 2040
cttcccagtt tggtgtggc agcttcaga ctccatcctc cttcagctcc atgtccctcc 2100
ctggtgcccc aactgcacatcg cttggtgctg ctgcttaccc tagtctcacc aatcgtggat 2160
ctaactttgc tcctgagact ggacagactg caggacaatt ccagacacgg acagcagagg 2220
gtgtgggtgt ctggccacag tggcagggcc agcagcctca tcatcgatc agttcttagtg 2280
agcaacatgt tcaacaacccg ccagcacagc aacctggcca gcctgaggc ttccaggaga 2340
tgctgtccat gctggagat cagagcaaca gctacaacaa tgaagaattc cctgatctaa 2400
ctatgtttcc cccctttca gaatagaact attgggggtga ggataagggg tgggggagaa 2460
aaaatcactg tttgtttta aaaagcaaat cttctgtaa acagaataaa agttcctctc 2520
ccttccttc ctcacccct gacatgtacc cccttccct tctggctgtt cccctgctct 2580
gttgccctcct aaggtAACAT ttataaaaaaa aaaaaaa 2616

<212> PRT

<213> homo sapiens

<400> 6

Met Ala Ala Thr Thr Ala Asn Pro Glu Met Thr Ser Asp Val Pro Ser
1 5 10 15

Leu Gly Pro Ala Ile Ala Ser Gly Asn Ser Gly Pro Gly Ile Gln Gly
20 25 30

Gly Gly Ala Ile Val Gln Arg Ala Ile Lys Arg Arg Pro Gly Leu Asp
35 40 45

Phe Asp Asp Asp Gly Glu Gly Asn Ser Lys Phe Leu Arg Cys Asp Asp
50 55 60

Asp Gln Met Ser Asn Asp Lys Glu Arg Phe Ala Arg Ser Asp Asp Glu
65 70 75 80

Gln Ser Ser Ala Asp Lys Glu Arg Leu Ala Arg Glu Asn His Ser Glu
85 90 95

Ile Glu Arg Arg Arg Asn Lys Met Thr Ala Tyr Ile Thr Glu Leu
100 105 110

Ser Asp Met Val Pro Thr Cys Ser Ala Leu Ala Arg Lys Pro Asp Lys
115 120 125

Leu Thr Ile Leu Arg Met Ala Val Ser His Met Lys Ser Leu Arg Gly
130 135 140

Thr Gly Asn Thr Ser Thr Asp Gly Ser Tyr Lys Pro Ser Phe Leu Thr
145 150 155 160

Asp Gln Glu Leu Lys His Leu Ile Leu Glu Ala Ala Asp Gly Phe Leu
165 170 175

Phe Ile Val Ser Cys Glu Thr Gly Arg Val Val Tyr Val Ser Asp Ser
180 185 190

Val Thr Pro Val Leu Asn Gln Pro Gln Ser Glu Trp Phe Gly Ser Thr
195 200 205

Leu Tyr Asp Gln Val His Pro Asp Asp Val Asp Lys Leu Arg Glu Gln
210 215 220

Leu Ser Thr Ser Glu Asn Ala Leu Thr Gly Arg Ile Leu Asp Leu Lys
225 230 235 240

Thr Gly Thr Val Lys Lys Glu Gly Gln Ser Ser Met Arg Met Cys
245 250 255

Met Gly Ser Arg Arg Ser Phe Ile Cys Arg Met Arg Cys Gly Ser Ser
260 265 270

Ser Val Asp Pro Val Ser Val Asn Arg Leu Ser Phe Val Arg Asn Arg
275 280 285

Cys Arg Asn Gly Leu Gly Ser Val Lys Asp Gly Glu Pro His Phe Val
290 295 300

Val Val His Cys Thr Gly Tyr Ile Lys Ala Trp Pro Pro Ala Gly Val
305 310 315 320

Ser Leu Pro Asp Asp Asp Pro Glu Ala Gly Gln Gly Ser Lys Phe Cys
325 330 335

Leu Val Ala Ile Gly Arg Leu Gln Val Thr Ser Ser Pro Asn Cys Thr
340 345 350

Asp Met Ser Asn Val Cys Gln Pro Thr Glu Phe Ile Ser Arg His Asn
355 360 365

Ile Glu Gly Ile Phe Thr Phe Val Asp His Arg Cys Val Ala Thr Val
370 375 380

Gly Tyr Gln Pro Gln Glu Leu Leu Gly Lys Asn Ile Val Glu Phe Cys
385 390 395 400

His Pro Glu Asp Gln Gln Leu Leu Arg Asp Ser Phe Gln Gln Val Val
405 410 415

Lys Leu Lys Gly Gln Val Leu Ser Val Met Phe Arg Phe Arg Ser Lys
420 425 430

Asn Gln Glu Trp Leu Trp Met Arg Thr Ser Ser Phe Thr Phe Gln Asn
435 440 445

Pro Tyr Ser Asp Glu Ile Glu Tyr Ile Ile Cys Thr Asn Thr Asn Val
450 455 460

Lys Asn Ser Ser Gln Glu Pro Arg Pro Thr Leu Ser Asn Thr Ile Gln
465 470 475 480

Arg Pro Gln Leu Gly Pro Thr Ala Asn Leu Pro Leu Glu Met Gly Ser
485 490 495

Gly Gln Leu Ala Pro Arg Gln Gln Gln Gln Thr Glu Leu Asp Met
500 505 510

Val Pro Gly Arg Asp Gly Leu Ala Ser Tyr Asn His Ser Gln Val Val
515 520 525

Gln Pro Val Thr Thr Gly Pro Glu His Ser Lys Pro Leu Glu Lys
530 535 540

Ser Asp Gly Leu Phe Ala Gln Asp Arg Asp Pro Arg Phe Ser Glu Ile
545 550 555 560

Tyr His Asn Ile Asn Ala Asp Gln Ser Lys Gly Ile Ser Ser Ser Thr
565 570 575

Val Pro Ala Thr Gln Gln Leu Phe Ser Gln Gly Asn Thr Phe Pro Pro
580 585 590

Thr Pro Arg Pro Ala Glu Asn Phe Arg Asn Ser Gly Leu Ala Pro Pro
595 600 605

Val Thr Ile Val Gln Pro Ser Ala Ser Ala Gly Gln Met Leu Ala Gln
610 615 620

Ile Ser Arg His Ser Asn Pro Thr Gln Gly Ala Thr Pro Thr Trp Thr
625 630 635 640

Pro Thr Thr Arg Ser Gly Phe Ser Ala Gln Gln Val Ala Thr Gln Ala
645 650 655

Thr Ala Lys Thr Arg Thr Ser Gln Phe Gly Val Gly Ser Phe Gln Thr
660 665 670

Pro Ser Ser Phe Ser Ser Met Ser Leu Pro Gly Ala Pro Thr Ala Ser
675 680 685

Pro Gly Ala Ala Ala Tyr Pro Ser Leu Thr Asn Arg Gly Ser Asn Phe
690 695 700

AUGUST 22 1995 - 1022 PM '94

Ala Pro Glu Thr Gly Gln Thr Ala Gly Gln Phe Gln Thr Arg Thr Ala
705 710 715 720

Glu Gly Val Gly Val Trp Pro Gln Trp Gln Gly Gln Gln Pro His His
725 730 735

Arg Ser Ser Ser Ser Glu Gln His Val Gln Gln Pro Pro Ala Gln Gln
740 745 750

Pro Gly Gln Pro Glu Val Phe Gln Glu Met Leu Ser Met Leu Gly Asp
755 760 765

Gln Ser Asn Ser Tyr Asn Asn Glu Glu Phe Pro Asp Leu Thr Met Phe
770 775 780

Pro Pro Phe Ser Glu
785

<210> 7
<211> 816
<212> DNA
<213> homo sapiens

<400> 7

gatttgtaaa ccccgagcg aggttctgct tacccgaggc cgctgctgtg cggagacccc 60
cgggtaagc caccgtcatc atgtctgacc aggaggcaaa accttcaact gaggacttgg 120
gggataagaa ggaaggtgaa tatattaaac tcaaagtcat tggacaggat agcagtgaga 180
ttcacttcaa agtggaaaatg acaacacatc tcaagaaaact caaagaatca tactgtcaaa 240
gacagggtgt tccaatgaat tcactcaggt ttctcttga gggtcagaga attgctgata 300
atcatactcc aaaagaactg ggaatggagg aagaagatgt gattgaagtt tatcaggaac 360
aaacgggggg tcattcaaca gtttagatat tcttttatt tttttcttt tccctcaatc 420
ctttttatt tttaaaaata gttttttgt aatgtggtgt tcaaaacgga attgaaaact 480
ggcaccccat ctcttgaaa catctggtaa tttgaattct agtgcattt attcattatt 540
gtttgtttc attgtgctga tttttggta tcaagcctca gtcccccttca tattaccctc 600
tcctttttaa aaattacgtg tgcacagaga ggtcaccttt ttcaggacat tgcattttca 660
ggcttgggt gataaataag atcgaccaat gcaagtgttc ataatgactt tccaattggc 720
cctgatgttc tagcatgtga ttacttcact ccctggactg tgactttcag tggagatgg 780
aatttttcc agaaaaactg aactgtggaa aaatga 816

<210> 8
<211> 101
<212> PRT
<213> homo sapiens

<400> 8

Met Ser Asp Gln Glu Ala Lys Pro Ser Thr Glu Asp Leu Gly Asp Lys
1 5 10 15

Lys Glu Gly Glu Tyr Ile Lys Leu Lys Val Ile Gly Gln Asp Ser Ser
20 25 30

Glu Ile His Phe Lys Val Lys Met Thr Thr His Leu Lys Lys Leu Lys
35 40 45

Glu Ser Tyr Cys Gln Arg Gln Gly Val Pro Met Asn Ser Leu Arg Phe
50 55 60

Leu Phe Glu Gly Gln Arg Ile Ala Asp Asn His Thr Pro Lys Glu Leu
65 70 75 80

Gly Met Glu Glu Glu Asp Val Ile Glu Val Tyr Gln Glu Gln Thr Gly
85 90 95

Gly His Ser Thr Val
100

<210> 9
<211> 24
<212> DNA
<213> homo sapiens

<400> 9

cttatgtaga cacgttttc aaag

24

<210> 10
<211> 25
<212> DNA
<213> homo sapiens

<400> 10

gtgctcagcc cacgccccgg cgctg

25

<210> 11
<211> 25
<212> DNA
<213> homo sapiens

<400> 11
ccagcatctc cacgaaggca gagtt 25

<210> 12
<211> 25
<212> DNA
<213> homo sapiens

<400> 12
agcttccaac cacgtgtaaa tccta 25

<210> 13
<211> 25
<212> DNA
<213> homo sapiens

<400> 13
tgacatcccc cacggccata gcgaa 25

<210> 14
<211> 25
<212> DNA
<213> homo sapiens

<400> 14
cgaccaggg cacgtgcaat ggcga 25

<210> 15
<211> 25
<212> DNA
<213> homo sapiens

<400> 15
gttgtgatc cacggacact cctac 25

<210> 16
<211> 5
<212> PRT
<213> homo sapiens

<400> 16
Leu Lys Lys Glu Pro
1 5

<210> 17
<211> 5
<212> PRT

<213> homo sapiens

<400> 17

Leu Lys Leu Glu Pro
1 5

<210> 18

<211> 7

<212> PRT

<213> homo sapiens

<400> 18

Leu Lys Leu Glu Pro Asn Pro
1 5

<210> 19

<211> 4

<212> PRT

<213> homo sapiens

<400> 19

Phe Lys Leu Glu
1

<210> 20

<211> 4

<212> PRT

<213> homo sapiens

<400> 20

Arg Lys Met Glu
1

<210> 21

<211> 7

<212> PRT

<213> homo sapiens

<400> 21

Arg Lys Met Glu His Asp Gly
1 5

<210> 22

<211> 20

<212> DNA

<213> homo sapiens

<400> 22

cacagcagcg gcctcggtt

<210> 23
<211> 20
<212> DNA
<213> homo sapiens

<400> 23

catgatgacg gtggcttcac 20

<210> 24
<211> 20
<212> DNA
<213> homo sapiens

<400> 24

gtgacctctc tgtgcacacg 20

<210> 25
<211> 5
<212> DNA
<213> homo sapiens

<400> 25

rcgtg 5

<210> 26
<211> 24
<212> DNA
<213> homo sapiens

<400> 26

ctttgaaaga cgtgtctaca taag 24

<210> 27
<211> 25
<212> DNA
<213> homo sapiens

<400> 27

cagcgccggg gcgtgggctg agcac 25

<210> 28
<211> 25
<212> DNA
<213> homo sapiens

<400> 28

aactctgcct tcgtggagat gctgg 25

<210> 29
<211> 25
<212> DNA
<213> homo sapiens

<400> 29

taggatttac acgtgggtgg aagct 25

<210> 30
<211> 25
<212> DNA
<213> homo sapiens

<400> 30

ttcgctatgg ccgtaaaaat gtcac 25

<210> 31
<211> 25
<212> DNA
<213> homo sapiens

<400> 31

tcgccattgc acgtgccctg gttcg 25

<210> 32
<211> 25
<212> DNA
<213> homo sapiens

<400> 32

gttaggagtgt ccgtggatca caagc 25

<210> 33
<211> 26
<212> DNA
<213> homo sapiens

<400> 33

ttggtgccat ggccgtgggg caagtc 26

<210> 34
<211> 26
<212> DNA
<213> homo sapiens

<400> 34

cacctggcca tcgtgtcccc ggagcc 26

<210> 35
<211> 25
<212> DNA
<213> homo sapiens

<400> 35

caggaagaga tcgtgagggc agcaa 25

<210> 36
<211> 29
<212> DNA
<213> homo sapiens

<400> 36

cattgccata gctcgtgccc ttgttagac 29

<210> 37
<211> 20
<212> DNA
<213> homo sapiens

<400> 37

aacggaagcc agaacattcc 20

<210> 38
<211> 20
<212> DNA
<213> homo sapiens

<400> 38

aggcttcctg tggcaaagag 20

<210> 39
<211> 20
<212> DNA
<213> homo sapiens

<400> 39

ctcaaagtgc gacagcctca 20

<210> 40
<211> 20
<212> DNA
<213> homo sapiens

<400> 40

ccctgcagta ggtttctgct 20

<210> 41
<211> 24
<212> DNA
<213> homo sapiens

<400> 41

atgacttcca agctggccgt ggct 24

<210> 42
<211> 25
<212> DNA
<213> homo sapiens

<400> 42

tctcagccct cttcaaaaac ttctc 25

<210> 43
<211> 21
<212> DNA
<213> homo sapiens

<400> 43

cgtcatcatg tctgaccagg a 21

<210> 44
<211> 21
<212> DNA
<213> homo sapiens

<400> 44

cactgaaagt cacagtccag g 21

<210> 45
<211> 30
<212> DNA
<213> homo sapiens

<400> 45

tgacggggtc acccacactg tgccccatcta 30

<210> 46
<211> 30
<212> DNA
<213> homo sapiens

<400> 46

ctagaagcat ttgcgggtgga cgatggaggg 30

<210> 47
<211> 15
<212> DNA
<213> homo sapiens

<400> 47

gccggcgccc tccat 15

<210> 48
<211> 15
<212> DNA
<213> homo sapiens

<400> 48

atggagggcgc cccgc 15

<210> 49
<211> 39
<212> DNA
<213> homo sapiens

<400> 49

aggaccagcgc ccggggccat ggctgagcac agccgcttc 39

<210> 50
<211> 29
<212> DNA
<213> homo sapiens

<400> 50

aggaacagcgc ccgggggctg agcacagcc 29

<210> 51
<211> 23
<212> DNA
<213> homo sapiens

<400> 51

tttcaaagac gtgtctacat aag 23

<210> 52
<211> 22
<212> DNA
<213> homo sapiens

<400> 52

ttgaaagacg tgtctacata ag 22

<210> 53
<211> 21
<212> DNA
<213> homo sapiens

<400> 53

tgaaagacgt gtctacataa g 21

<210> 54
<211> 21
<212> DNA
<213> homo sapiens

<400> 54

tgaaagacgt gtctacataa g 21

<210> 55
<211> 23
<212> DNA
<213> homo sapiens

<400> 55

cttgaaaga cgtgtctaca taa 23

<210> 56
<211> 22
<212> DNA
<213> homo sapiens

<400> 56

cttgaaaga cgtgtctaca ta 22

<210> 57
<211> 21
<212> DNA
<213> homo sapiens

<400> 57

cttgaaaga cgtgtctaca t 21

<210> 58
<211> 20
<212> DNA
<213> homo sapiens

<400> 58

cttgaaaga cgtgtctaca 20

<210> 59
<211> 2818
<212> DNA
<213> homo sapiens

<400> 59

cctgactgcg cggggcgctc gggacctgcg cgcacctcg accttcacca cccgccccggg 60
ccgcggggag cggacgaggg ccacagcccc ccacccgcca gggagccca gttgtcgccg 120
tctgaacgtc tcaaagggcc acagcgacaa tgacagctga caaggagaag aaaaggagta 180
gctcgagag gaggaaggag aagtcccggg atgtgcgcg gtgcggcgg agcaaggaga 240
cgagggtgtt ctatgagctg gcccatgagc tgcctctgcc ccacagtgtg agctccatc 300
tggacaaggc ctccatcatg cgactggaaa tcagcttct gcgaacacac aagctcctct 360
cctcagtttgc ctctgaaaac gagtccgaag ccgaagctga ccagcagatg gacaacttgt 420
acctgaaagc cttggaggggt ttcattgcgc tggtgaccca agatggcgc acatgtttc 480
tgtcagaaaa catcagcaag ttcatggac ttacacaggt ggagctaaca ggacatagta 540
tctttgactt cactcatccc tgcgaccatg aggagattcg tgagaacctg agtctaaaa 600
atggctctgg ttttggaaaa aaaagcaaag acatgtccac agagcgggac ttcttcatga 660
ggatgaagt cacggtcacc aacagaggcc gtactgtcaa cctcaagtca gccacctgga 720
aggtcttgca ctgcacgggc caggtgaaaag tctacaacaa ctgcctcct cacaatagtc 780
tgtgtggcta caaggagccc ctgctgtct gcctcatcat catgtgtgaa ccaatccagc 840
acccatccca catggacatc cccctggata gcaagacctt cctgagccgc cacagcatgg 900
acatgaagtt cacctactgt gatgacagaa tcacagaact gattggttac caccctgagg 960
agctgcttgg ccgctcagcc tatgaattct accatgcgc agactccgag aacatgacca 1020
agagtcacca gaacttgc accaagggtc aggttagtaag tggccagtagc cggatgctcg 1080
caaagcatgg gggctacgtg tggctggaga cccaggggac ggtcatctac aaccctcgca 1140
acctgcagcc ccagtgcac atgtgtgtca actacgttct gagtgagatt gagaagaatg 1200
acgtgggttt ctccatggac cagactgaat ccctgttcaa gccccacccg atggccatga 1260
acagcatctt tgatagcagt ggcaaggggg ctgtgtctga gaagagtaac ttcctattca 1320
ccaagctaaa ggaggagccc gaggagctgg cccagctggc tcccacccca ggagacgcca 1380
tcatctctt ggatttcggg aatcagaact tcgaggagtc ctcagccat ggcaaggcca 1440
tcctgccccc gagccagcca tggccacgg agttgaggag ccacagcacc cagagcgagg 1500
ctgggagcct gcctgccttc accgtgcccc aggagctgc cccggggcagc accacccca 1560

gtgccaccag cagcagcagc agctgctcca cgcccaatag ccctgaagac tattacacat 1620
cttggataa cgacctgaag attgaagtga ttgagaagct cttcgccatg gacacagagg 1680
ccaaggacca atgcagtacc cagacggatt tcaatgagct ggacttggag acactggcac 1740
cctatatccc catggacggg gaagacttcc agctaagccc catctgcccc gaggagcggc 1800
tcttggcgga gaaccacag tccacccccc agcaactgctt cagtgccatg acaaacatct 1860
tccagccact ggccctgtta gccccgcaca gtcccttcct cctggacaag tttcagcagc 1920
agctggagag caagaagaca gagcccggc accggcccat gtcctccatc ttctttgatg 1980
ccggaagcaa agcatccctg ccaccgtgct gtggccaggc cagcaccct ctctttcca 2040
tggggggcag atccaataacc cagtggcccc cagatccacc attacatttt gggcccacaa 2100
agtggggcgt cggggatcag cgcacagagt tcttggagc agcgccgttg gggcccccctg 2160
tctctccacc ccatgtctcc accttcaaga caaggtctgc aaagggtttt ggggctcgag 2220
gccagacgt gctgagtcgg gccatggtag ccctctccaa caagctgaag ctgaagcgac 2280
agctggagta tgaagagcaa gccttccagg acctgagcgg gggggaccca cctggtggca 2340
gcacccatcaca tttgatgtgg aaacggatga agaacctcag gggtggagc tgccctttga 2400
tgccggacaa gccactgagc gcaaattgtac ccaatgataa gttcacccaa aacccatga 2460
ggggcctggg ccatccctg agacatctgc cgctgccaca gcctccatct gccatcagtc 2520
ccggggagaa cagcaagagc aggttccccc cacagtgcta cgccaccctg taccaggact 2580
acagcctgtc gtcagccac aagggtgttag gcatggcaag ccggctgtc gggccctcat 2640
ttgagtccta cctgctgccc gaactgacca gatatgactg tgaggtgaac gtgcccgtgc 2700
tgggaagctc cacgctcctg caaggagggg acctcctcag agccctggac caggccacct 2760
gagccaggcc ttctacctgg gcagcacctc tgccgacgccc gtcccaccag ctccaccc 2818

<210> 60
<211> 870
<212> PRT
<213> homo sapiens

<400> 60

Met Thr Ala Asp Lys Glu Lys Lys Arg Ser Ser Ser Glu Arg Arg Lys
1 5 10 15

Glu Lys Ser Arg Asp Ala Ala Arg Cys Arg Arg Ser Lys Glu Thr Glu
20 25 30

Val Phe Tyr Glu Leu Ala His Glu Leu Pro Leu Pro His Ser Val Ser

35 40 45

Ser His Leu Asp Lys Ala Ser Ile Met Arg Leu Glu Ile Ser Phe Leu
50 55 60

Arg Thr His Lys Leu Leu Ser Ser Val Cys Ser Glu Asn Glu Ser Glu
65 70 75 80

Ala Glu Ala Asp Gln Gln Met Asp Asn Leu Tyr Leu Lys Ala Leu Glu
85 90 95

Gly Phe Ile Ala Val Val Thr Gln Asp Gly Asp Met Ile Phe Leu Ser
100 105 110

Glu Asn Ile Ser Lys Phe Met Gly Leu Thr Gln Val Glu Leu Thr Gly
115 120 125

His Ser Ile Phe Asp Phe Thr His Pro Cys Asp His Glu Glu Ile Arg
130 135 140

Glu Asn Leu Ser Leu Lys Asn Gly Ser Gly Phe Gly Lys Lys Ser Lys
145 150 155 160

Asp Met Ser Thr Glu Arg Asp Phe Phe Met Arg Met Lys Cys Thr Val
165 170 175

Thr Asn Arg Gly Arg Thr Val Asn Leu Lys Ser Ala Thr Trp Lys Val
180 185 190

Leu His Cys Thr Gly Gln Val Lys Val Tyr Asn Asn Cys Pro Pro His
195 200 205

Asn Ser Leu Cys Gly Tyr Lys Glu Pro Leu Leu Ser Cys Leu Ile Ile
210 215 220

Met Cys Glu Pro Ile Gln His Pro Ser His Met Asp Ile Pro Leu Asp
225 230 235 240

Ser Lys Thr Phe Leu Ser Arg His Ser Met Asp Met Lys Phe Thr Tyr
245 250 255

Cys Asp Asp Arg Ile Thr Glu Leu Ile Gly Tyr His Pro Glu Glu Leu
260 265 270

Leu Gly Arg Ser Ala Tyr Glu Phe Tyr His Ala Leu Asp Ser Glu Asn

275

280

285

Met Thr Lys Ser His Gln Asn Leu Cys Thr Lys Gly Gln Val Val Ser
290 295 300

Gly Gln Tyr Arg Met Leu Ala Lys His Gly Gly Tyr Val Trp Leu Glu
305 310 315 320

Thr Gln Gly Thr Val Ile Tyr Asn Pro Arg Asn Leu Gln Pro Gln Cys
325 330 335

Ile Met Cys Val Asn Tyr Val Leu Ser Glu Ile Glu Lys Asn Asp Val
340 345 350

Val Phe Ser Met Asp Gln Thr Glu Ser Leu Phe Lys Pro His Leu Met
355 360 365

Ala Met Asn Ser Ile Phe Asp Ser Ser Gly Lys Gly Ala Val Ser Glu
370 375 380

Lys Ser Asn Phe Leu Phe Thr Lys Leu Lys Glu Glu Pro Glu Glu Leu
385 390 395 400

Ala Gln Leu Ala Pro Thr Pro Gly Asp Ala Ile Ile Ser Leu Asp Phe
405 410 415

Gly Asn Gln Asn Phe Glu Glu Ser Ser Ala Tyr Gly Lys Ala Ile Leu
420 425 430

Pro Pro Ser Gln Pro Trp Ala Thr Glu Leu Arg Ser His Ser Thr Gln
435 440 445

Ser Glu Ala Gly Ser Leu Pro Ala Phe Thr Val Pro Gln Ala Ala Ala
450 455 460

Pro Gly Ser Thr Thr Pro Ser Ala Thr Ser Ser Ser Ser Cys Ser
465 470 475 480

Thr Pro Asn Ser Pro Glu Asp Tyr Tyr Thr Ser Leu Asp Asn Asp Leu
485 490 495

Lys Ile Glu Val Ile Glu Lys Leu Phe Ala Met Asp Thr Glu Ala Lys
500 505 510

Asp Gln Cys Ser Thr Gln Thr Asp Phe Asn Glu Leu Asp Leu Glu Thr

515 520 525

Leu Ala Pro Tyr Ile Pro Met Asp Gly Glu Asp Phe Gln Leu Ser Pro
530 535 540

Ile Cys Pro Glu Glu Arg Leu Leu Ala Glu Asn Pro Gln Ser Thr Pro
545 550 555 560

Gln His Cys Phe Ser Ala Met Thr Asn Ile Phe Gln Pro Leu Ala Pro
565 570 575

Val Ala Pro His Ser Pro Phe Leu Leu Asp Lys Phe Gln Gln Gln Leu
580 585 590

Glu Ser Lys Lys Thr Glu Pro Glu His Arg Pro Met Ser Ser Ile Phe
595 600 605

Phe Asp Ala Gly Ser Lys Ala Ser Leu Pro Pro Cys Cys Gly Gln Ala
610 615 620

Ser Thr Pro Leu Ser Ser Met Gly Gly Arg Ser Asn Thr Gln Trp Pro
625 630 635 640

Pro Asp Pro Pro Leu His Phe Gly Pro Thr Lys Trp Ala Val Gly Asp
645 650 655

Gln Arg Thr Glu Phe Leu Gly Ala Ala Pro Leu Gly Pro Pro Val Ser
660 665 670

Pro Pro His Val Ser Thr Phe Lys Thr Arg Ser Ala Lys Gly Phe Gly
675 680 685

Ala Arg Gly Pro Asp Val Leu Ser Pro Ala Met Val Ala Leu Ser Asn
690 695 700

Lys Leu Lys Leu Lys Arg Gln Leu Glu Tyr Glu Glu Gln Ala Phe Gln
705 710 715 720

Asp Leu Ser Gly Gly Asp Pro Pro Gly Gly Ser Thr Ser His Leu Met
725 730 735

Trp Lys Arg Met Lys Asn Leu Arg Gly Gly Ser Cys Pro Leu Met Pro
740 745 750

Asp Lys Pro Leu Ser Ala Asn Val Pro Asn Asp Lys Phe Thr Gln Asn

755 760 765
Pro Met Arg Gly Leu Gly His Pro Leu Arg His Leu Pro Leu Pro Gln
770 775 780

Pro Pro Ser Ala Ile Ser Pro Gly Glu Asn Ser Lys Ser Arg Phe Pro
785 790 795 800

Pro Gln Cys Tyr Ala Thr Gln Tyr Gln Asp Tyr Ser Leu Ser Ser Ala
805 810 815

His Lys Val Ser Gly Met Ala Ser Arg Leu Leu Gly Pro Ser Phe Glu
820 825 830

Ser Tyr Leu Leu Pro Glu Leu Thr Arg Tyr Asp Cys Glu Val Asn Val
835 840 845

Pro Val Leu Gly Ser Ser Thr Leu Leu Gln Gly Gly Asp Leu Leu Arg
850 855 860

Ala Leu Asp Gln Ala Thr
865 870

<210> 61
<211> 2004
<212> DNA
<213> homo sapiens

<400> 61

atggactggc aagaccacag gtcgaccacg gagctgcgca aggaaaagtc ccgggatgct 60
gcccccgagcc ggccgcagccca ggagaccgag gtgttgttacc agctggctca cacgctgcc 120
ttcgccccgct gcgtcagcgc ccacctggac aaggcctcta tcatgcgcct caccatcagc 180
tacctgcgca tgcaccgcct ctgcgcgcga ggggagtggaa accaggtggg agcagggggaa 240
gaaccactgg atgcctgcta cctgaaggcc ctggagggt tcgtcatggt gctcaccgc 300
gagggagaca tggcttacct gtcggagaat gtcagcaaac acctgggcct cagtcagctg 360
gagtcattt gacacagcat ctttgatttc atccacccct gtgaccaaga ggagcttcag 420
gacgcccgtga ccccccagca gaccctgtcc aggaggaagg tggaggcccc cacggagcgg 480
tgcttctcct tgccatgaa gagtacgctc accagccgct ggcgcacccct caacctcaag 540
gcggccacct ggaagggtct gaactgctct ggacatatga gggcctacaa gccacctgct 600
cagacttctc cagctggag ccctgactca gagccccgc tgcagtgcct ggtgctcatc 660

tgcgaaagcca tccccaccc aggcaagcctg gagccccac tggggcagg ggccttcctc 720
agccgccaca gcctggacat gaagttcacc tactgtgacg acaggattgc agaagtggct 780
ggctatagtc ccgatgacct gatcggtgt tccgcctacg agtacatcca cgcgctggac 840
tccgacgcgg tcagcaagag catccacacc ttgctgagca agggccaggg agtaacaggg 900
cagtatcgct tcctggccc gagtggtggc tacctgtgga cccagaccca ggccacagtg 960
gtgtcagggg gacggggccc ccagtcggag agtacgtct gtgtccattt ttaatcagc 1020
caggtggaag agaccggagt ggtgctgtcc ctggagcaaa cggagcaaca ctctcgaga 1080
cccattcagc gggcgcccc ctctcagaag gacaccccta accctggga cagccttgac 1140
acccctggcc cccggatcct tgccttcctg cacccgcctt ccctgagcga ggctgcccctg 1200
ggcgctgacc cccgcccgtt ctgcagccct gaccccggtc gcctcctggg acccatcctg 1260
gatggggctt cagtagcagc cactcccagc accccgctgg ccacacggca ccccaaagt 1320
cctcttcgg ctgatctccc agatgaacta cctgtggca ccgagaatgt gcacagactc 1380
ttcacctccg ggaaagacac tgaggcagt gagacagatt tagatatagc tcaggatgct 1440
gatgctctgg atttggagat gctggcccc tacatctcca tggatgatga cttccagctc 1500
aacgcccagcg agcagctacc cagggcctac cacagacctc tgggggctgt ccccgcccc 1560
cgtgctcgga gcttccatgg cctgtcacct ccagcccttg agccctccct gctacccgc 1620
tgggggagtg acccccggtc gagctgctcc agcccttcca gaggggaccc ctcagcatcc 1680
tctccatgg ctggggctcg gaagaggacc ctggccaga gctcagagga cgaggacgag 1740
ggagtggagc tgctggagtg gagacctccc aaaaggtccc ccagcccaga acacgaaaac 1800
tttctgctct ttcctctcag cctgagtttc cttctgacag gaggaccagc cccagggagc 1860
ctgcaggacc ccagcaccccc actcctgaac ctgaatgagc ccctgggcct gggccctca 1920
ctgctctctc cgtactcaga cgaggacact acccagcccg gggccctt ccagccaagg 1980
gcaggctcag cccaggctga ctga 2004

<210> 62
<211> 667
<212> PRT
<213> homo sapiens

<400> 62

Met Asp Trp Gln Asp His Arg Ser Thr Thr Glu Leu Arg Lys Glu Lys
1 5 10 15

Ser Arg Asp Ala Ala Arg Ser Arg Arg Ser Gln Glu Thr Glu Val Leu
20 25 30

Tyr Gln Leu Ala His Thr Leu Pro Phe Ala Arg Gly Val Ser Ala His
35 40 45

Leu Asp Lys Ala Ser Ile Met Arg Leu Thr Ile Ser Tyr Leu Arg Met
50 55 60

His Arg Leu Cys Ala Ala Gly Glu Trp Asn Gln Val Gly Ala Gly Gly
65 70 75 80

Glu Pro Leu Asp Ala Cys Tyr Leu Lys Ala Leu Glu Gly Phe Val Met
85 90 95

Val Leu Thr Ala Glu Gly Asp Met Ala Tyr Leu Ser Glu Asn Val Ser
100 105 110

Lys His Leu Gly Leu Ser Gln Leu Glu Leu Ile Gly His Ser Ile Phe
115 120 125

Asp Phe Ile His Pro Cys Asp Gln Glu Glu Leu Gln Asp Ala Leu Thr
130 135 140

Pro Gln Gln Thr Leu Ser Arg Arg Lys Val Glu Ala Pro Thr Glu Arg
145 150 155 160

Cys Phe Ser Leu Arg Met Lys Ser Thr Leu Thr Ser Arg Gly Arg Thr
165 170 175

Leu Asn Leu Lys Ala Ala Thr Trp Lys Val Leu Asn Cys Ser Gly His
180 185 190

Met Arg Ala Tyr Lys Pro Pro Ala Gln Thr Ser Pro Ala Gly Ser Pro
195 200 205

Asp Ser Glu Pro Pro Leu Gln Cys Leu Val Leu Ile Cys Glu Ala Ile
210 215 220

Pro His Pro Gly Ser Leu Glu Pro Pro Leu Gly Arg Gly Ala Phe Leu
225 230 235 240

Ser Arg His Ser Leu Asp Met Lys Phe Thr Tyr Cys Asp Asp Arg Ile
245 250 255

Ala Glu Val Ala Gly Tyr Ser Pro Asp Asp Leu Ile Gly Cys Ser Ala
260 265 270

4000022355 - 102604

Tyr Glu Tyr Ile His Ala Leu Asp Ser Asp Ala Val Ser Lys Ser Ile
275 280 285

His Thr Leu Leu Ser Lys Gly Gln Ala Val Thr Gly Gln Tyr Arg Phe
290 295 300

Leu Ala Arg Ser Gly Gly Tyr Leu Trp Thr Gln Thr Gln Ala Thr Val
305 310 315 320

Val Ser Gly Gly Arg Gly Pro Gln Ser Glu Ser Ile Val Cys Val His
325 330 335

Phe Leu Ile Ser Gln Val Glu Glu Thr Gly Val Val Leu Ser Leu Glu
340 345 350

Gln Thr Glu Gln His Ser Arg Arg Pro Ile Gln Arg Gly Ala Pro Ser
355 360 365

Gln Lys Asp Thr Pro Asn Pro Gly Asp Ser Leu Asp Thr Pro Gly Pro
370 375 380

Arg Ile Leu Ala Phe Leu His Pro Pro Ser Leu Ser Glu Ala Ala Leu
385 390 395 400

Ala Ala Asp Pro Arg Arg Phe Cys Ser Pro Asp Leu Arg Arg Leu Leu
405 410 415

Gly Pro Ile Leu Asp Gly Ala Ser Val Ala Ala Thr Pro Ser Thr Pro
420 425 430

Leu Ala Thr Arg His Pro Gln Ser Pro Leu Ser Ala Asp Leu Pro Asp
435 440 445

Glu Leu Pro Val Gly Thr Glu Asn Val His Arg Leu Phe Thr Ser Gly
450 455 460

Lys Asp Thr Glu Ala Val Glu Thr Asp Leu Asp Ile Ala Gln Asp Ala
465 470 475 480

Asp Ala Leu Asp Leu Glu Met Leu Ala Pro Tyr Ile Ser Met Asp Asp
485 490 495

Asp Phe Gln Leu Asn Ala Ser Glu Gln Leu Pro Arg Ala Tyr His Arg
500 505 510

Pro Leu Gly Ala Val Pro Arg Pro Arg Ala Arg Ser Phe His Gly Leu
515 520 525

Ser Pro Pro Ala Leu Glu Pro Ser Leu Leu Pro Arg Trp Gly Ser Asp
530 535 540

Pro Arg Leu Ser Cys Ser Ser Pro Ser Arg Gly Asp Pro Ser Ala Ser
545 550 555 560

Ser Pro Met Ala Gly Ala Arg Lys Arg Thr Leu Ala Gln Ser Ser Glu
565 570 575

Asp Glu Asp Glu Gly Val Glu Leu Leu Gly Val Arg Pro Pro Lys Arg
580 585 590

Ser Pro Ser Pro Glu His Glu Asn Phe Leu Leu Phe Pro Leu Ser Leu
595 600 605

Ser Phe Leu Leu Thr Gly Gly Pro Ala Pro Gly Ser Leu Gln Asp Pro
610 615 620

Ser Thr Pro Leu Leu Asn Leu Asn Glu Pro Leu Gly Leu Gly Pro Ser
625 630 635 640

Leu Leu Ser Pro Tyr Ser Asp Glu Asp Thr Thr Gln Pro Gly Gly Pro
645 650 655

Phe Gln Pro Arg Ala Gly Ser Ala Gln Ala Asp
660 665

<210> 63
<211> 12
<212> PRT
<213> homo sapiens

<400> 63

Tyr Gly Arg Lys Lys Arg Arg Gln Arg Arg Arg Gly
1 5 10

<210> 64
<211> 11
<212> PRT
<213> homo sapiens

<400> 64

Ala Gln Arg Lys Arg Lys Met Glu His Asp Gly
1 5 10

<210> 65
<211> 11
<212> PRT
<213> homo sapiens

<400> 65

Phe Asp Lys Leu Lys Lys Glu Pro Asp Ala Leu
1 5 10

<210> 66
<211> 12
<212> PRT
<213> homo sapiens

<400> 66

Glu Val Ala Leu Lys Leu Glu Pro Asn Pro Glu Ser
1 5 10

<210> 67
<211> 12
<212> PRT
<213> homo sapiens

<400> 67

Asp Met Val Asn Glu Phe Lys Leu Glu Leu Val Glu
1 5 10